



#9/Election  
D/King  
6-9-03

Atty. Docket No. 8013-1006  
PATENTS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Masaru KURAMOTO et al.

Confirmation No. 9452

Serial No. 10/091,437

GROUP 2822

Filed March 7, 2002

Examiner Ida M. Soward

GROUP III-V COMPOUND SEMICONDUCTOR  
CRYSTAL STRUCTURE AND METHOD OF  
EPITAXIAL GROWTH OF THE SAME AS  
WELL AS SEMICONDUCTOR DEVICE  
INCLUDING THE SAME

RESPONSE

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Responsive to the requirement to elect a species in the Official Action of April 18, 2003, applicants elect the species of Figures 3A-F. Claims 18-57 are readable thereon.

The grouping of species offered in the Official Action is not correct and has been modified. If the Examiner is not ready to accept the following explanation and the above election, then applicants - in the alternative and with traverse - elect the species of Figure 3A and claims 24-51 readable thereon.

The invention relates to a Group III-V compound semiconductor epitaxial layer with improved tilt and twist angles. The compound semiconductor epitaxial layers of the prior

art had tilt angles over 300 seconds and twist angles over 1100 seconds (page 4, lines 3-11).

Figure 3A shows a schematic of the Group III-V compound semiconductor epitaxial layer in the elected claims. Figure 2 illustrates the problem discovered by the present inventors, as discussed on pages 26-28 and page 7, lines 4-7. As is apparent from a comparison of Figure 3A to Figure 2, the improvement offered by the present invention is achieved, at least in part, by providing a mask 5 that is much higher. Figures 3B-F depict different shapes for the mask. As illustrated Figures 3A-F, the mask 5 has a height that is at least as high as the facet structure (shown in dashed lines).

Claims 18-20 and 52-54 define the layer by its tilt angle and claims 21, 23, 55, and 57 define the layer by its twist angle. These two angles are related and should not be the subject of a restriction. Claims 24-31, 33-45, 47-51 define the structure either in terms of the height of the mask (the height being such that the horizontal dislocations, which emerge from the walls of the facet structure, are stopped so that the tilt and twist angles are reduced) or the stopping of the horizontal dislocations by walls of the mask that are of sufficient height (again, so that the tilt and twist angles are reduced). All of these claims are believed to be directed to a common species in which the compound semiconductor epitaxial layer is improved by the reduction of the tilt and twist angles.

KURAMOTO et al. S.N. 10/091,437

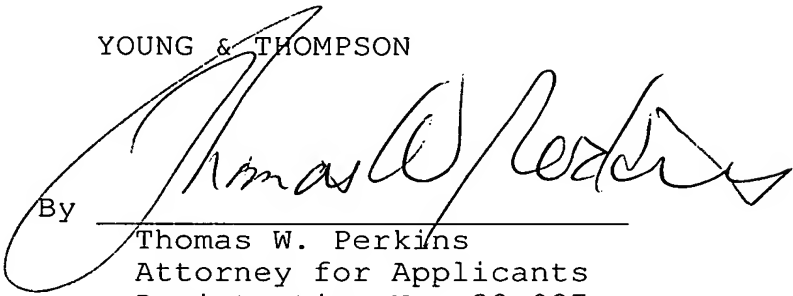
--The present claims do not distinguish the various shapes of the mask shown in Figures 3A-F and there is no basis for asserting that these figures illustrate separate species.

Accordingly, it is believed that the grouping of species offered in the Official Action is not correct and that the election made herein should be accepted.

Respectfully submitted,

YOUNG & THOMPSON

By



Thomas W. Perkins  
Attorney for Applicants  
Registration No. 33,027  
745 South 23rd Street  
Arlington, VA 22202  
Telephone: 521-2297

June 4, 2003